<u>What is claimed is:</u>

1   1.   A method for transmitting data in a wireless channel comprising:

2   estimating throughput for a subsequent data transfer using prefix adaptation;

3   estimating throughput for the subsequent data transfer using postfix adaptation;

4   selecting an adaptation technique for use in the subsequent data transfer based

5   on estimated throughput; and

6   transferring data using the selected adaptation technique.

1   2.   The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes dividing an amount of data expected to be successfully transferred during a

4   data transfer by an expected total duration of the data transfer.

1   3.   The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes estimating the throughput of a prefix adaptation frame exchange.

1   4.   The method of claim 3, wherein:

2   estimating throughput for a subsequent data transfer using postfix adaptation

3   includes estimating the throughput of a postfix adaptation frame exchange.

1   5.   The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes evaluating the following equation:

4

5
$$T_{prefix} = \frac{(1 - P_{collision}) \sum L_i \cdot (1 - PER(L_i))}{P_{collision} \cdot D_{RTS/TCTS} + (1 - P_{collision}) D_{RTS/TCTS/DATA/TACK}}$$

6

7   where T_{prefix} is the estimated throughput using prefix adaptation, $P_{collision}$ is the

8   probability that a collision occurs, L_i is the length of the ith packet of data that will be

9   transmitted, $D_{RTS/TCTS}$ is the duration of a channel access/RTS/SIFS/TCTS sequence,

10     $D_{RTS/TCTS/DATA/ACK}$ is the duration of a channel access/RTS/SIFS/TCTS/Data/Ack

11   sequence, and $PER(L_i) = 1 - (1 - BER)^{(L_i \times 8)}$ is the probability that a packet of length

12   L_i will be received correctly.

1   6.   The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using postfix adaptation

3   includes evaluating the following equation:

4

5

$$T_{postfix} = \frac{(1 - P_{collision}) \sum L_i \cdot (1 - PER(L_i))}{D_{DATA/TACK}}$$

6

7   where $T_{postfix}$ is the estimated throughput using postfix adaptation, $P_{collision}$ is the

8   probability that a collision occurs, L_i is the length of the ith packet of data that will be

9   transmitted, $D_{DATA/TACK}$ is the duration of a channel access/DATA/TACK sequence, and

10     $PER(L_i) = 1 - (1 - BER)^{(L_i \times 8)}$ is the probability that a packet of length L_i will be

11   received correctly.

1   7.   The method of claim 1, wherein:

2   selecting an adaptation technique for use in the subsequent data transfer includes

3   selecting an adaptation technique having a higher estimated throughput.

1   8.   The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes evaluating a number of parameter combinations.

1   9.   The method of claim 8, wherein:

2   evaluating a number of parameter combinations includes evaluating a number of

3   combinations of fragmentation threshold, modulation type, and prefix adaptation.

1   10. The method of claim 1, wherein:

2   estimating throughput for a subsequent data transfer using postfix adaptation

3   includes evaluating a number of parameter combinations.

1   11. A method for use in a wireless network, comprising:

2   determining an adaptation validity duration as an estimate of the useful life of

3   adaptation information;

4   when data is to be transferred, determining a time T since adaptation

5   information was last obtained; and

6   when T is greater than the adaptation validity duration, selecting prefix

7   adaptation for a subsequent data transfer.

1   12. The method of claim 11, further comprising:

2   when T is less than the adaptation validity duration, choosing between prefix

3   adaptation and postfix adaptation for the subsequent data transfer based upon estimated

4   throughput.

1   13. The method of claim 12, wherein:

2   choosing between prefix adaptation and postfix adaptation includes:

3   estimating throughput for the subsequent data transfer using prefix

4   adaptation;

5   estimating throughput for the subsequent data transfer using postfix

6   adaptation; and

7   selecting an adaptation technique having a higher estimated throughput.

1   14. The method of claim 11, wherein:

2   determining an adaptation validity duration includes monitoring variation of

3   adaptation parameters as a function of time.

1   15.   A method for use in a wireless network, comprising:

2   determining a time T since adaptation information was last obtained;

3   determining a postfix data transmission rate to be used when transmitting data

4   using postfix adaptation, based on T;

5   estimating throughput for a subsequent data transfer using prefix adaptation;

6   estimating throughput for the subsequent data transfer using postfix adaptation

7   and the postfix data transmission rate; and

8   selecting an adaptation technique to be used for the subsequent data transfer

9   based on estimated throughput.

1   16.   The method of claim 15, further comprising:

2   transferring data using the selected adaptation technique.

1   17.   The method of claim 15, wherein:

2   determining a postfix data transmission rate includes choosing a first data

3   transmission rate if T exceeds a threshold value and choosing a second, different data

4   transmission rate if T does not exceed the threshold value.

1   18.   The method of claim 15, wherein:

2   determining a postfix data transmission rate includes evaluating an equation that

3   is a function of T.

1   19.   An article comprising a storage medium having instructions stored thereon that,

2   when executed by a computing platform, result in:

3   estimating throughput for a subsequent data transfer in a wireless channel using

4   prefix adaptation;

5   estimating throughput for the subsequent data transfer in the wireless channel

6   using postfix adaptation;

7   selecting an adaptation technique for use in the subsequent data transfer based

8   on estimated throughput; and

9   transferring data in the wireless channel using the selected adaptation technique.

1   20.   The article of claim 19, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes dividing an amount of data expected to be successfully transferred during a

4   data transfer by an expected total duration of the data transfer.

1   21.   The article of claim 19, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes estimating the throughput of a prefix adaptation frame exchange.

1   22.   The article of claim 19, wherein:

2   estimating throughput for a subsequent data transfer using postfix adaptation

3   includes estimating the throughput of a postfix adaptation frame exchange.

1   23.   The article of claim 19, wherein:

2   estimating throughput for a subsequent data transfer using prefix adaptation

3   includes evaluating a number of parameter combinations.

1   24.   An apparatus comprising:

2   a wireless transceiver to transmit and receive wireless signals;

3   a throughput estimator to estimate the throughput of a subsequent data transfer

4   using prefix adaptation and the throughput of the subsequent data transfer using postfix

5   adaptation; and

6   a selector to select an adaptation technique for use in the subsequent data

7   transfer based on estimated throughput.

1   25.   The apparatus of claim 24, wherein:

2   said selector selects an adaptation technique that has a higher estimated

3   throughput.

1   26.   The apparatus of claim 24, wherein:

2   said throughput estimator estimates the throughput of the subsequent data

3 transfer using prefix adaptation by dividing an amount of data expected to be

4 successfully transferred during the data transfer by an expected total duration of the data

5 transfer.

1   27.   A system comprising: ω

2   at least two antennas;

3   a wireless transceiver, coupled to said at least two antennas, to transmit and

4 receive wireless signals;

5   a throughput estimator to estimate the throughput of a subsequent data transfer

6 using prefix adaptation and the throughput of the subsequent data transfer using postfix

7 adaptation; and

8   a selector to select an adaptation technique for use in the subsequent data

9 transfer based on estimated throughput.

1   28.   The system of claim 27, wherein:

2   said selector selects an adaptation technique that has a higher estimated

3 throughput.

1   29.   The system of claim 27, wherein:

2   said throughput estimator estimates the throughput of the subsequent data

3 transfer using prefix adaptation by dividing an amount of data expected to be

4 successfully transferred during the data transfer by an expected total duration of the data

5 transfer.